

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	VICTOR MAN	Examiner:	KUMAR, PREETI
Serial No.:	10/820,891	Group Art Unit:	1796
Filed:	APRIL 8, 2004	Docket No.:	1357USI2
Conf No.	8889		
Title:	STABLE LIQUID ENZYME COMPOSITIONS		

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APPEAL BRIEF

Commissioner for Patents
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This is an appeal from the Final Rejection mailed August 1, 2008 in which claims 1-10 and 14 were rejected. The Notice of Appeal was filed on October 30, 2008.

The \$540 large entity fee under 37 C.F.R. §41.20(b)(2) for filing a brief in support of an appeal has been charged to a credit card. Any underpayment should also be charged (and any overpayment should be credited) to Deposit Account No. 501257.

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REAL PARTY IN INTEREST

The real party in interest is Ecolab Inc., by virtue of an assignment recorded at 015335/0037. Ecolab is a Delaware corporation headquartered in St. Paul, Minnesota. Further information regarding Ecolab Inc. is available at <http://www.ecolab.com>.

RELATED APPEALS AND INTERFERENCES

Copending US Serial Number 10/208,404 is on appeal to the Board of Patent Appeals and Interferences. US Serial Number 10/208,404 is a parent of this case. The case at hand is a continuation-in-part of US/SN 10/208,404. There are no other prior and pending appeals, interferences or judicial proceedings known to Appellant, the Appellant's legal representative, or assignee Ecolab Inc. which may be related to, directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

STATUS OF CLAIMS

No claims are allowed. Claims 1-10 and 14 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Linard et al. (U.S. Statutory Invention H1776) in view of Blake et al. (U.S. Pat. No. 5,648,329). Claims 11-13 and 15-27 are canceled. All of these rejections are being appealed. A clean copy of the appealed claims 1-10 and 14 is reproduced in the Claims Appendix.

STATUS OF AMENDMENTS

The Final Rejection was mailed August 1, 2008. In it, claims 1-10 and 14 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Linard et al. in view of Blake et al. All of the amendments made by Appellant have been incorporated into the claims and are included in the claims as listed in the Claims Appendix.

SUMMARY OF CLAIMED SUBJECT MATTER

The invention according to independent claim 1 is drawn to a liquid enzyme cleaning composition comprising a surfactant, a deterative enzyme¹, about 10% to about 20% by weight of a boric acid salt², and 40% to about 85% by weight water³; wherein the liquid enzyme cleaning composition is formulated to provide deterative enzyme that retains 80% of its initial enzyme activity at ambient temperature for at least 30 days after forming the composition⁴.

Dependent claim 2 is drawn to the composition of claim 1, wherein the boric acid salt comprises at least one of an alkali metal boric acid salt⁵, an alkanolammonium boric acid salt⁶, an alkanolamine boric acid salt⁷, and a combination thereof.

Dependent claim 3 is drawn to the composition of claim 2, wherein the boric acid salt comprises at least one of monoethanolammonium borate, monoethanolamine borate, diethanolammonium borate, diethanolamine borate, triethanolammonium borate, triethanolamine borate, and a combination thereof.⁸

Dependent claim 4 is drawn to the composition of claim 1, wherein the composition is a solution.⁹

Dependent claim 5 is drawn to the composition of claim 1, wherein the deterative enzyme comprises at least one of protease, amylase, lipase, cellulase, peroxidase,¹⁰ gluconase,¹¹ mannanase,¹² and a combination thereof.

¹ Specification on page 10 line 30 through page 11 line 1

² Specification on page 8 at lines 3-11

³ Specification on page 10 at lines 10-11

⁴ Specification on page 4 at lines 7-14

⁵ Specification on page 7 at line 24

⁶ Specification on page 7 at line 26-27

⁷ Specification on page 7 at line 25

⁸ Specification on page 7 at lines 25-27

⁹ Specification on page 7 at line 23

¹⁰ Specification on page 16 at lines 3-4

Dependent claim 6 is drawn to the composition of claim 1, wherein the surfactant comprises at least one of anionic surfactant, nonionic surfactant, and a combination thereof.¹³

Dependent claim 7 is drawn to the composition of claim 6, wherein the surfactant comprises at least one of a C13-C15 alcohol alkoxylate¹⁴, a polyoxyethylene alkyl phosphate ester acid, and a combination thereof.¹⁵

Dependent claim 8 is drawn to the composition of claim 1, further comprising an ingredient comprising at least one of a source of calcium ions, an optical brightener, a hydrotrope, a polyol, a builder, a dye, and a combination thereof.¹⁶

Dependent claim 9 is drawn to the composition of claim 1, further comprising a pH in the range of 9 to 11.¹⁷

Dependent claim 10 is drawn to the composition of claim 1, wherein the composition is configured for use in a clean-in-place cleaning program.¹⁸

Dependent claim 14 is drawn to the composition of claim 1, wherein the composition is a 1:10 dilution with water and the dilution is physically stable for one week.¹⁹

¹¹ Specification on page 16 at line 19

¹² Specification on page 24 at lines 20

¹³ Specification on page 29 lines 11-13

¹⁴ Specification on page 64 at lines 14-16

¹⁵ Specification on page 30 at lines 29-31 through page 31 line 2

¹⁶ Specification on page 11 lines 5-7

¹⁷ Specification on page 6 lines 4-6

¹⁸ Specification on page 55 lines 29-31

¹⁹ Specification on page 13 lines 17-20

GROUND OF REJECTION TO BE REVIEWED ON APPEAL

The grounds of rejection to be reviewed on appeal include the following:

Whether claims 1-10 and 14 were improperly rejected under 35 U.S.C. § 103(a) as being unpatentable over Linard et al. (U.S. Statutory Invention Registration H1776) in view of Blake et al. (U.S. Pat. No. 5,648,329).²⁰

²⁰ Final Office Action mailed August 1, 2008

ARGUMENT**REJECTION OF CLAIMS 1-10 AND 14 UNDER 35 U.S.C. §103(A):****ARGUMENTS CONCERNING CLAIMS 1-10 AND 14**

The issue on appeal is whether claims 1-10 and 14 were improperly rejected under 35 U.S.C. Section 103(a) as obvious over Linard et al. in view of Blake et al.

Linard et al. was relied upon as disclosing heavy duty, enzyme-containing, aqueous liquid detergent including at least one surfactant, protease enzymes and an enzyme stabilizing system having a neat liquid pH of 9.5. Linard et al. do not specifically teach a liquid enzyme composition that retains 80% of its initial activity at ambient temperature for at least 30 days after forming the composition as required by independent claim 1.²¹

Blake et al. was relied upon as teaching a liquid detergent premix comprising an effective amount of borate-containing material to prevent crystallization and/or precipitation of the premix.²²

The Examiner failed to make a *prima facie* case of obviousness. In order to make a *prima facie* case of obviousness, all the limitations of the claims must be taught or suggested in the references cited by the Examiner and all the teachings of the prior art need to suggest the claimed subject matter to the person of ordinary skill in the art.²³ As articulated by the Supreme Court, a combination is obvious if it is no more than the predictable use of known elements according to their established functions; and there is a reason to combine the known elements.²⁴ “[I]t remains necessary to identify the reason why a person of ordinary skill in the art would have

²¹ Office Action mailed August 1, 2008 at pages 3-4

²² Ibid. at pp. 4-5

²³ *In re Kotzab*, 217 F.3d 1365, 1370 (Fed. Cir. 2000).

²⁴ *KSR Int’l Co. v. Teleflex, Inc.*, 550 U.S. ___, 127 S. Ct. 1727, 82 USPQ2d 1385 (2007).

combined the prior art elements in the manner claimed.”²⁵ Appellants submit that the Examiner has failed to make the required *prima facie* case, as the cited references, either alone or in combination, do not teach or suggest all the claim limitations, lack sufficient reason to combine, and are unlikely to succeed.

In addition, the Office has failed to present a reason why one would selectively construct the claimed composition in view of repeated contrary teachings in both Blake et al. and Linard et al. The totality of the prior art must be considered, and proceeding contrary to accepted wisdom in the art is evidence of nonobviousness.²⁶ The combination proposed by the office requires improper disregard for teachings in Blake et al. and Linard et al. that are contrary to the claimed composition.

Linard et al. in combination with Blake et al. fail to suggest a liquid enzyme cleaning composition including 40 to 85 weight % water and that retain at least 80% of the initial enzyme activity after storage at ambient temperature for 30 days after formation.

The Examiner asserted that it would have been obvious to formulate a liquid enzyme composition that retains 80% of its initial activity at ambient temperature for 30 days in view of Linard et al.’s teachings at col. 2, lines 1-5, col. 10, lines 40-50, and col. 11, lines 55-65.²⁷

However, Linard et al.’s teachings prove the opposite contention:

To date it has been difficult to incorporate a proteolytic enzyme in a high pH liquid and maintain acceptable enzyme stability over the long storage periods that result during the production, distribution and sale of the product.²⁸

²⁵ *Id.*

²⁶ *In re Hedges*, 783 F.2d 1038, 228 USPQ 685 (Fed. Cir. 1986)

²⁷ Office Action mailed August 1, 2008 at page 5

²⁸ Linard et al. at Column 2, lines 1-4

As demonstrated by Linard et al., formulating a liquid enzyme composition retaining 80% of its initial activity at ambient temperature for 30 days cannot be achieved nor is it made obvious by Linard et al.'s teachings.

The difficulty was further demonstrated by Linard et al. when only 38% of initial enzymatic activity remained after 4 weeks at 105° F.²⁹ The lack of enzyme stability in the Linard et al. compositions is further supported by the Declaration of Victor Man.³⁰ Appellants submitted the declaration of Victor Man to demonstrate that the Linard et al. compositions are not physically stable. The Man Declaration³¹ distinguishes Linard et al. from the present invention on the grounds that the compositions in Linard et al. had poor physical stability.³² Linard et al. is inoperational for the purposes of achieving a stable enzyme cleaning composition as recited by Appellants' claims. In fact, the physical stability of the Linard et al. compositions was so poor that the enzyme stability of the compositions could not be determined. A copy of the Man declaration is provided in the Appendix hereto.

The Man declaration (originally submitted in the parent application) also shows Appellants' invention demonstrates unexpected results, that of prolonged physical stability of the compositions of the invention. In contrast to the combination of Linard et al. and Blake et al, the claimed compositions provide enzyme stabilization that is unexpected. Appellants' testing of the claimed compositions revealed that compositions containing boric acid salt dramatically increased stability even when formulations contained high levels of water (62.73-69.13%).³³ The

²⁹ Ibid. at Col. 10, lines 40-65

³⁰ Submitted with Response dated April 10, 2008

³¹ Submitted along with response dated April 10, 2008

³² Declaration of Victor Man dated April 3, 2003 submitted originally in USS/N 09/606,478

³³ Specification at pages 60 line 1 through page 61 line 20 and Figures 1-3

experiments further revealed that the formulae tested were clear upon dilution.³⁴ These unexpected results come from compositions including concentrations of about 10 wt-% potassium borate. As demonstrated in the Man declaration, the compositions of Linard et al. do not teach a liquid deterative enzyme cleaning composition that retains 80% of its initial enzyme activity at ambient temperature for at least 30 days after forming the composition. Linard et al. is an inoperative reference.

Blake et al. do not remedy the shortcomings of Linard et al. Blake et al. is directed to a high actives content premix. Blake et al. do not teach a stable liquid enzyme composition with high amounts of water. The only mention of the weight percentage of water in the premix of Blake et al. is 16%.³⁵ By contrast, claim 1 recites a liquid cleaning composition comprising between 40% to about 85% by weight water. As stated in the specification, “Thus, the concentration of water in the present stabilized enzyme cleaning composition can be, for example, from about 40 weight percent to about 85 percent weight water, from about 40 weight percent to about 75 weight percent water, from about 60 to about 85 weight percent water, from about 60 to about 75 weight percent water, e.g., 40% to 69-72% by weight water. For example, the concentration of water in the present stabilized enzyme cleaning composition can be in a range from at least about 40%, 41%, 42%, 43%, 44%, 45%,...80%, 81%, 82%, 83%, 84%, 85% by weight water (always selecting an upper limit that is greater than or equal to the lower limit).”³⁶ Thus, claim 1 recites a composition containing about 40% by weight water, or at least 24% more than the single weight percentage of water disclosed in Blake et al.

³⁴ Specification at page 54 lines 17-18

³⁵ Blake et al. at Col. 5, Example 3

³⁶ Specification at p. 10, lines 9-20

Blake et al., in contrast, teach a “premix” that is confined to 40 wt-% or more of polyhydroxy fatty acid amides with added borate compounds to prevent precipitation of the polyhydroxy fatty acid amides from the concentrated solution. In addition, Blake et al. do **not** teach the “same components in the same ratio as recited in the instant claims” as is asserted by the Office. None of Blake et al.’s demonstrated premixes contain enzyme, surfactant, 15-85 wt-% water, 10-20 wt-% boric acid salt, and wherein the deterative enzyme retains 80% of its initial enzyme activity for at least 30 days. For example, Blake et al.’s Example 3 does not contain sufficient enzyme (0%), water (less than 2wt-%) and insufficient alkanol amine borate (less than 10wt-%). Moreover, Blake et al. teach that the premixes of their invention are useful in preparing concentrated laundry liquids when the formulations call for *low water levels* in the finished composition.³⁷ Blake et al. therefore teaches away from combination with Linard et al. The skilled artisan would not combine a reference intended for low water concentration formulations with a reference having high water content that is already inoperable for maintaining enzyme activity and expect to obtain a composition having 40-85% by weight water and retain at least 80% of the initial enzyme activity after storage for at least 30 days.

Since Linard et al. is inoperable for maintaining prolonged enzyme stability and teaches away from prolonged enzyme stability, the skilled artisan would not take a reference teaching low water content (Blake et al.) and combine with an inoperable reference expecting to obtain prolonged enzyme stability as claimed by Applicants. Due to these shortcomings, the combination of Linard et al. and Blake et al. is incorrect and, if made, does not teach or suggest a liquid enzyme cleaning composition including 10 to 20 wt-% of a boric acid salt, does not teach or suggest a liquid enzyme cleaning composition that retains at least 80% of the initial enzyme

³⁷ Blake et al. at col. 3 lines 17-20

activity after storage at ambient temperature for at least 30 days after formation, and does not teach a composition having 40 to 85% by weight water.

CONCLUSION

In view of the above comments, the claimed invention is not rendered obvious since a *prima facie* case of obviousness has not been established. Accordingly, reversal of the rejections based on 35 U.S.C. §103(a) over Linard et al in view of Blake et al. is requested.

Please consider this a PETITION FOR EXTENSION OF TIME for a sufficient number of months to enter these papers or any future reply, if appropriate. Please charge any additional fees or credit overpayment to Deposit Account No. 501257.



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CLAIMS APPENDIX

1. A liquid enzyme cleaning composition comprising a surfactant, a deterative enzyme, about 10% to about 20% by weight of a boric acid salt, and 40% to about 85% by weight water;
wherein the liquid enzyme cleaning composition is formulated to provide deterative enzyme that retains 80% of its initial enzyme activity at ambient temperature for at least 30 days after forming the composition.
2. The composition of claim 1, wherein the boric acid salt comprises at least one of an alkali metal boric acid salt, an alkanolammonium boric acid salt, an alkanolamine boric acid salt, and a combination thereof.
3. The composition of claim 2, wherein the boric acid salt comprises at least one of monoethanolammonium borate, monoethanolamine borate, diethanolammonium borate, diethanolamine borate, triethanolammonium borate, triethanolamine borate, and a combination thereof.
4. The composition of claim 1, wherein the composition is a solution.
5. The composition of claim 1, wherein the deterative enzyme comprises at least one of protease, amylase, lipase, cellulase, peroxidase, gluconase, mannanase, and a combination thereof.
6. The composition of claim 1, wherein the surfactant comprises at least one of anionic surfactant, nonionic surfactant, and a combination thereof.
7. The composition of claim 6, wherein the surfactant comprises at least one of a C13-C15 alcohol alkoxylate, a polyoxyethylene alkyl phosphate ester acid, and a combination thereof.
8. The composition of claim 1, further comprising an ingredient comprising at least one of a source of calcium ions, an optical brightener, a hydrotrope, a polyol, a builder, a dye, and a combination thereof.

9. The composition of claim 1, further comprising a pH in the range of 9 to 11.
10. The composition of claim 1, wherein the composition is configured for use in a clean-in-place cleaning program.
- 11- 13. (Canceled).
14. The composition of claim 1, wherein the composition is a 1:10 dilution with water and the dilution is physically stable for one week.
- 15 -27. (Canceled).

EVIDENCE APPENDIX

1. Office Action mailed August 1, 2008
2. U.S. Statutory Invention Registration H1776
3. U.S. Pat. No. 5,648,329
4. U.S. Patent Application SN 10/820,891, for a “Stable Liquid Enzyme Compositions With Enhanced Activity”
5. Declaration of Victor Man
6. *In re Kotzab*, 217 F.3d 1365 (Fed. Cir. 2000).
7. *KSR Int’l Co. v. Teleflex, Inc.*, 550 U.S. ___, 127 S. Ct. 1727, 82 USPQ2d 1385 (2007).
8. *In re Hedges*, 783 F.2d 1038, 228 USPQ 685 (Fed. Cir. 1986)

RELATED PROCEEDINGS APPENDIX

Copending US Serial Number 10/208,404, a parent of the case at hand, is on appeal to the Board of Patent Appeals and Interferences. The case at hand is a continuation-in-part of US/SN 10/208,404.